

REMARKS

Claims 1, 2, 4-28 are pending. Claims 12-20 have been withdrawn from consideration. By this Response, claims 1 and 8 are amended and claims 27 and 28 added. Reconsideration and allowance based on the above amendments and following remarks are respectfully requested.

Interview

Applicants appreciate the courtesies extended to applicant's representative during the interview conducted on September 9, 2004. During the interview, independent claims 1 and 8 were discussed in conjunction with the applied references, Suzuki (U.S. 5,987,185) and Le (U.S. 6,608,942). The Examiner stated that clarification of the claimed bright and dark parts in the claims would overcome the rejections. The Examiner also stated that the applied references do not detect bright and dark parts at the pixel level and do not perform smoothing of the bright pixels adjacent the dark pixels. Applicants in reliance upon the discussion in the interview have amended independent claims 1 and 8 to further define the bright and dark parts. Applicants have also added independent claims 27 and 28 which recite the detection of the bright and dark parts at the pixel level and the smoothing of the bright pixels adjacent to the dark pixels.

Prior Art Rejections

The Office Action rejects claims 1, 2 and 4-11 under 35 U.S.C. §103(a) as being unpatentable over Suzuki (U.S. 5,987,185) in view of Le (U.S. 6,608,942) and claims 21-26 under 35 U.S.C. §103(a) as being unpatentable over Suzuki in view of Kawamura (U.S. 5,251,267). These rejections are respectfully traversed.

Claim 1 recites, *inter alia*, an image display device for displaying an image according to image data, comprising: a detection unit for detecting bright parts of the image that are adjacent to dark parts of the image, from the image data, the bright parts having a higher luminance value than the dark parts; a smoothing unit coupled to the detection unit for smoothing the bright parts of the image, detected by the detection unit, that are adjacent to the dark parts of the image by filtering the image data, leaving the dark parts of the image unsmoothed.

Claim 8, recites, *inter alia*, a method of displaying an image according to image data, comprising the steps of: (a) detecting dark parts of the image from the image data; (b) detecting bright parts of the image that are adjacent to the dark parts of the image, from the image data, the bright parts having a higher luminance value than the dark parts; (c) smoothing the bright parts detecting in said step (b) by filtering the image data, leaving the dark parts of the image unsmoothed.

As recited in independent claims 1 and 8, both the bright parts are defined as having a higher luminance value than the dark parts and it is only the bright parts of the image that are detected adjacent to the dark parts of the image, that are smoothed. The dark parts of the image are left unsmoothed.

Claim 27, recites, *inter alia*, an image display device for displaying an image according to image data comprising: a detection unit for detecting bright pixels of the image that are adjacent to dark pixels of the image, from the image data, a smoothing unit coupled to the detection unit, for smoothing the bright pixels of the image, detected by the detection unit, that adjacent to the dark pixels of the image by filtering the image data, leaving the dark pixels of the image unsmoothed.

Claim 28 recites, *inter alia*, a method of displaying image according to image data, comprising: detecting dark pixels of the image from the image data; detecting bright pixels of the image that are adjacent to the dark pixels of the image, from the image data, smoothing the bright pixels detected in said detecting bright pixel step by filtering the image data, leaving the dark pixels of the image unsmoothed.

In both claims 27 and 28, it is bright pixels that are adjacent to the dark pixels in an image that are detected. Only the bright pixels adjacent to the dark pixels are smoothed and the dark pixels are left unsmoothed.

The Office Action alleges that Suzuki in combination with Le provides the claimed features. Applicants respectfully disagree. Suzuki provides a system that relies upon density distribution in determining what areas to filter. Areas with small density changes such as speckled dots (62, 63) in Figs. 13 and 14 of Suzuki are filtered whereas the lines (61) are not filtered. See column 7, lines 47 through 67. In another embodiment of Suzuki, filtering is performed based upon chromatic grade. Specifically, areas having a color that is white or close to white, where the chromatic grade is high is sharpened while the white noise in areas where the color is black or the chromatic grade is relatively low is eliminated. This is accomplished across the entire image. See column 11, lines 29 through 37.

Suzuki, however, fails to teach or suggest detecting the bright parts that are adjacent to the dark parts of the image where the bright parts have a higher luminance than the dark parts and smoothing the bright parts of the image that are adjacent to dark parts of the image leaving the dark parts of the image unsmoothed. Further, Suzuki fails to teach or suggest detecting bright pixels of the image that are adjacent to dark pixels of the image and smoothing the bright pixels of the image that are adjacent to dark pixels of the image leaving the dark pixels of the image unsmoothed, as recited in newly added independent claims 27 and 28.

Further, Le fails to make up for the deficiencies of Suzuki. Le teaches the filtering of an entire area surrounding a detected edge of an image. This area includes both dark and bright image data. Le addresses the problem of smoothing jagged edges without blurring the edges, altering image texture or causing unwanted effects. In Le's teachings, the roles of the bright and dark areas are reversible. This is illustrated at column 3, lines 19-33 and column 29, lines 9-18 in which Le proposes to thicken dark oblique lines in areas in which dark features are in the minority and to thicken bright oblique lines in areas in which bright features are in the minority. Therefore, Le's system treats dark and bright areas the same depending on what areas are in the minority or in the majority. Le does not teach or suggest smoothing the bright parts of the image that are adjacent to the dark parts of the image leaving the dark parts of the image unsmoothed, as claimed. Further, Le fails to teach or suggest detecting bright pixels that are adjacent to dark pixels and smoothing the bright pixels of the image adjacent to the dark pixels leaving the dark pixels unsmoothed as recited in newly added claims 27 and 28. In Le, it is the entire area of pixels surrounding a detected edge that is smoothed in the filtering process, not just the bright parts adjacent to dark parts or bright pixels adjacent to dark pixels as claimed.

Thus, the combination of Suzuki and Le fails to teach or suggest each and every feature of the claimed invention, as required, to establish a *prima facie* case of obviousness.

Likewise, for the above reasons, the combination of Suzuki and Kawamura fail to establish a *prima facie* case of obviousness.

Therefore, in view of the above, applicants respectfully request reconsideration and withdrawal of the rejections.

Conclusion

For at least these reasons, it is respectfully submitted that claims 1, 2, 4-11 and 21-28 are distinguishable over the cited art. Favorable consideration and prompt allowance are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Chad J. Billings (Reg. No. 48,917) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Appl. No. 09/846,384

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully Submitted,

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